

Applicant: Larry W. Smith
Serial No. 10/662,203
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IN THE CLAIMS

Please amend claims 1, 13, 18 and 22 as follows.

1. (Currently amended) A multi-unit centralizer comprising:

a centralizer hub including a plurality of hub subunits removably engaging each other;

an elongated flange groove having at least one open end provided in each of said plurality of hub subunits; and

at least one spacer lug slidably and removably engaging each of said plurality of hub subunits by inserting said at least one spacer lug into said at least one open end and sliding said at least one spacer lug in said flange groove.

2. (Original) The multi-unit centralizer of claim 1 further comprising at least one flange groove provided in said each of said plurality of hub subunits and a lug flange carried by said at least one spacer lug and slidably engaging said at least one flange groove.

3. (Original) The multi-unit centralizer of claim 1 further comprising at least one clamp removably engaging said plurality of hub subunits and said at least one spacer lug to secure said plurality of hub subunits in said centralizer hub and said at least one spacer lug on said plurality of hub subunits, respectively.

Applicant: Larry W. Smith
Serial No. 10/662,203
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Attorney Docket No. 1065

4. (Original) The multi-unit centralizer of claim 3 further comprising at least one flange groove provided in said each of said plurality of hub subunits and a lug flange carried by said at least one spacer lug and slidably engaging said at least one flange groove.

5. (Original) The multi-unit centralizer of claim 3 further comprising at least one clamp groove provided in each of said plurality of hub subunits and wherein said at least one clamp is seated in said at least one clamp groove, respectively.

6. (Original) The multi-unit centralizer of claim 5 further comprising at least one flange groove provided in each of said plurality of hub subunits and a lug flange carried by said at least one spacer lug and slidably engaging said at least one flange groove.

7. (Original) The multi-unit centralizer of claim 3 further comprising at least one clamp slot provided in each of said at least one spacer lug and wherein said at least one clamp extends through said at least one clamp slot.

8. (Original) The multi-unit centralizer of claim 7 further comprising at least one clamp groove provided in each of said plurality of hub subunits and aligned with said at least one clamp slot and wherein said at least one clamp is seated in said at least one clamp groove and extends through said at least one clamp slot, respectively.

Applicant: Larry W. Smith

Serial No. 10/662,203

Filed: 09/12/2003

Attorney Docket No. 1065

9. (Original) The multi-unit centralizer of claim 2 wherein said at least one flange groove comprises at least one dovetail flange groove and said at least one spacer lug comprises a lug blade and said lug flange comprises a dovetail lug flange carried by said lug blade, said dovetail lug flange having flange wings and a flange face extending between said flange wings.

10. (Original) The multi-unit centralizer of claim 9 further comprising at least one clamp removably engaging said plurality of hub subunits and said at least one spacer lug to secure said plurality of hub subunits in said centralizer hub and said at least one spacer lug on said plurality of hub subunits, respectively.

11. (Original) The multi-unit centralizer of claim 10 further comprising at least one clamp groove provided in each of said plurality of hub subunits and wherein said at least one clamp is seated in said at least one clamp groove, respectively.

12. (Original) The multi-unit centralizer of claim 11 further comprising at least one clamp slot provided in each of said at least one spacer lug and wherein said at least one clamp extends through said at least one clamp slot.

13. (Currently amended) A multi-unit centralizer comprising:

a an elongated centralizer hub having a longitudinal axis and including a plurality of

Applicant: Larry W. Smith

Serial No. 10/662,203

Filed: 09/12/2003

Attorney Docket No. 1065

hub subunits for removably engaging each other;

a flange groove provided in each of said plurality of hub subunits;

a plurality of spacer lugs capable of removably and interchangeably engaging said centralizer hub, each of said plurality of spacer lugs having an attachment edge capable of engaging said centralizer hub by sliding said attachment edge in said flange groove in a direction parallel to said longitudinal axis and an outer edge spaced from said attachment edge, defining a radial dimension between said attachment edge and said outer edge; and

wherein said plurality of spacer lugs comprises a group of spacer lugs including at least a first set of spacer lugs having a first radial dimension and a second set of spacer lugs having a second radial dimension smaller than said first radial dimension, with at least three of said plurality of spacer lugs selected from said group of spacer lugs and removably engaging said centralizer hub.

14. (Original) The multi-unit centralizer of claim 13 further comprising at least one flange groove provided in each of said plurality of hub subunits and a lug flange carried by each of said plurality of spacer lugs for slidably engaging said at least one flange groove.

15. (Original) The multi-unit centralizer of claim 14 further comprising at least one clamp for removably engaging said plurality of hub subunits and said at least three of said plurality of spacer lugs and securing said plurality of hub subunits in said centralizer hub and said at least three of said plurality of spacer lugs on said centralizer hub.

Applicant: Larry W. Smith

Serial No. 10/662,203

Filed: 09/12/2003

Attorney Docket No. 1065

16. (Original) The multi-unit centralizer of claim 15 further comprising at least one clamp groove provided in each of said plurality of hub subunits for receiving said at least one clamp, respectively, and at least one clamp slot provided in each of said plurality of spacer lugs for receiving said at least one clamp.

17. (Original) The multi-unit centralizer of claim 13 wherein said plurality of spacer lugs further comprises a third set of spacer lugs having a third radial dimension intermediate in size between said first radial dimension and said second radial dimension.

18. (Currently amended) A multi-unit centralizer comprising:

a centralizer hub including a plurality of hub subunits removably attached to each other, said plurality of hub subunits each having at least one clamp groove for alignment with said at least one clamp groove of an adjacent one of said plurality of hub subunits in said centralizer hub;

a flange groove having at least one open end provided in each of said plurality of hub subunits;

a plurality of spacer lugs slidably and removably engaging said centralizer hub by insertion in said at least one open end of said flange groove, each of said plurality of spacer lugs having at least one clamp slot for alignment with said at least one clamp groove as said each of said plurality of spacer lugs slides along said centralizer hub; and

at least one band clamp removably seated in said at least one clamp groove and

Applicant: Larry W. Smith

Serial No. 10/662,203

Filed: 09/12/2003

Attorney Docket No. 1065

extending through said at least one clamp slot for removably securing said plurality of hub subunits in said centralizer hub and said plurality of spacer lugs on said centralizer hub.

19. (Original) The multi-unit centralizer of claim 18 further comprising at least one flange groove provided in each of said plurality of hub subunits and a lug flange carried by each of said plurality of spacer lugs for slidably engaging said at least one flange groove, and wherein said at least one clamp slot extends through said lug flange.

20. (Previously presented) The multi-unit centralizer of claim 18 wherein each of said plurality of spacer lugs comprises a lug blade carried by said lug flange, said lug blade having an outer edge spaced from said lug flange and defining a radial dimension extending between said outer edge and said lug flange; and wherein said plurality of spacer lugs comprises at least a first set of spacer lugs having a first radial dimension and a second set of spacer lugs having a second radial dimension smaller than said first radial dimension.

21. (Original) The multi-unit centralizer of claim 20 wherein said plurality of spacer lugs further comprises a third set of spacer lugs having a third radial dimension intermediate in size between said first radial dimension and said second radial dimension.

22. (Currently amended) A method of positioning a tubing string in a well bore, comprising:

Applicant: Larry W. Smith

Serial No. 10/662,203

Filed: 09/12/2003

Attorney Docket No. 1065

providing a multi-unit centralizer comprising a centralizer hub having a plurality of hub subunits for removably engaging each other and a plurality of spacer lugs for removably engaging said centralizer hub, said plurality of hub subunits each having a longitudinal axis;

providing said plurality of spacer lugs on said centralizer hub by ~~slidably and removably mounting~~ sliding at least one of said plurality of spacer lugs on each of said plurality of hub subunits along said longitudinal axis;

assembling said centralizer hub on the tubing string by causing engagement of said plurality of hub subunits to each other; and

lowering the tubing string and said centralizer into the well bore.

23. (Original) The method of claim 22 wherein said plurality of spacer lugs comprises at least a first set of spacer lugs having a first radial dimension and a second set of spacer lugs having a second radial dimension smaller than said first radial dimension, and wherein said providing said plurality of spacer lugs on said centralizer hub comprises selecting at least three spacer lugs from said plurality of spacer lugs and providing said at least three spacer lugs on said centralizer hub.

24. (Original) The method of claim 23 wherein said plurality of spacer lugs further comprises a third set of spacer lugs having a third radial dimension intermediate in size between said first radial dimension and said second radial dimension.

Applicant: Larry W. Smith

Serial No. 10/662,203

Filed: 09/12/2003

Attorney Docket No. 1065

25. (Original) The method of claim 23 wherein said selecting at least three spacer lugs from said plurality of spacer lugs comprises selecting at least three spacer lugs from one of said first set of spacer lugs and said second set of spacer lugs.

26. (Original) The method of claim 24 wherein said selecting at least three spacer lugs from said plurality of spacer lugs comprises selecting at least one spacer lug from said first set of spacer lugs, at least one spacer lug from said second set of spacer lugs, and at least one spacer lug from said third set of spacer lugs.